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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/697,107	10/31/2003	Michael Patrick Harmon	08350.3199	1451

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Washington, DC 20005-3315

EXAMINER

CHANG, CHING

ART UNIT	PAPER NUMBER
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3748

DATE MAILED: 03/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/697,107

Applicant(s)

HARMON, MICHAEL PATRICK

Examiner

Ching Chang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 23 December 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,3-9,11-14 and 17-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,9,11-14, and 24-27 is/are rejected.
- 7) ☒ Claim(s) 3-8 and 18-23 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |  |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. <u>12/20/2004</u> . |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>01/10/2005</u> . | 6) <input type="checkbox"/> Other: _____   |

## DETAILED ACTION

This Office Action is in response to the amendment filed on Dec. 23, 2004.

Claims 2, 10, 15-16 are cancelled, and new claims 25-27 are added as requested.

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. ***Claims 1, 14, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Allen et al. (US Patent 5,685,264) in view of Kuroda (US Patent 6,484,681).***

Allen discloses an engine, comprising: a block defining a combustion chamber (See Fig. 3); a crankshaft; a valve actuation system including: an engine valve (13) operatively associated with the combustion chamber and moveable between a first position at which the engine valve prevents a flow of fluid relative to the combustion chamber and a second position at which the fluid flows relative to the combustion chamber; a first cam (11) adapted to move the engine valve from the first position to the second position during a first lift period in response to a rotation of the crankshaft; a second cam (12) adapted to move the engine valve from the first position to the second

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position during a second lift period in response to a rotation of the second cam; and a cam following assembly (See Figs. 3-4, 8-9, 16-17) disposed between the first and second cams and the engine valve, the cam following assembly adapted to selectively connect one of the first and second cams with the engine valve to thereby move the engine valve through one of the first and second lift periods (See Col. 7, line 28 through Col. 10, line 24), wherein the cam following assembly further includes: a first and second cam roller (26, 38); a cam follower base (16); a first cam lever (24) pivotally connecting the first cam roller to the cam follower base; and a second cam lever (23) connecting the second cam roller to the cam follower base.

Allen discloses the invention as recited above, however, fails to disclose the second cam lever being fixed connecting the second cam roller to the cam follower base.

The patent to Kuroda on the other hand, teaches that it is conventional in the outboard motor art, to utilize a cam lever (part of 56; 57; 58) being fixed connecting a roller (61; 62; 63) to the cam follower base (part of 56; 57; 58).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have utilized the configuration of a cam lever being fixed connecting a roller to the cam follower base as taught by Kuroda in the Allen device, since the use thereof would provide an improved engine valve actuation system, with higher output energy, and lower fuel consumption.

3. ***Claims 9 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Allen et al. in view of Kuroda (as applied to claims 1 and 17 above), and further in view of Vorih et al. (US Patent 5,829,397).***

The modified Allen device, however, fails to disclose the said valve actuation system further including a rocker arm and a push rod.

The patent to Vorih on the other hand, teaches that it is conventional in the art of engine valve actuation system, to have utilized a rocker arm (202) operatively connected with the engine valve (300) and a push rod (212) operatively connected between a cam follower (214) and the rocker arm.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have utilized the rocker arm and the push rod as taught by Vorih in the modified Allen device, since the use thereof would provide an improved engine valve actuation system, to actuate engine valve more flexibly.

4. ***Claims 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Allen et al. (US Patent 5,685,264) in view of Kuroda (US Patent 6,484,681).***

Allen discloses an engine, comprising: a block defining a combustion chamber (See Fig. 3); a crankshaft; a valve actuation system including: an engine valve (13) operatively associated with the combustion chamber and moveable between a first position at which the engine valve prevents a flow of fluid relative to the combustion chamber and a second position at which the fluid flows relative to the combustion chamber; a first cam (11) adapted to move the engine valve from the first position to the

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second position during a first lift period in response to a rotation of the crankshaft; a second cam (12) adapted to move the engine valve from the first position to the second position during a second lift period in response to a rotation of the second cam; and a cam following assembly (See Figs. 3-4, 8-9, 16-17) disposed between the first and second cams and the engine valve, the cam following assembly adapted to selectively connect one of the first and second cams with the engine valve to thereby move the engine valve through one of the first and second lift periods (See Col. 7, line 28 through Col. 10, line 24), wherein the cam following assembly further includes: a first and second cam roller (26, 38); a cam follower base (16); a first cam lever (24) pivotally connecting the first cam roller to the cam follower base; and a second cam lever (23) connecting the second cam roller to the cam follower base.

Allen discloses the invention as recited above, however, fails to disclose a locking device being configured to selectively lock the first cam lever to the second cam lever.

The patent to Kuroda on the other hand, teaches that it is conventional in the outboard motor art, to utilize a hydraulic locking device (M3) including a hydraulic piston (66) being configured to selectively lock a first cam lever (part of 56) to a second cam lever (part of 58), the second cam lever being fixed connecting to the cam follower base (part of 58).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have utilized the configuration of a cam lever being fixed connecting a roller to the cam follower base as taught by Kuroda in the Allen device,

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since the use thereof would provide an improved engine valve actuation system, with higher output energy, and lower fuel consumption.

**5. *Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Allen et al. (US Patent 5,685,264) in view of Kuroda (US Patent 6,484,681).***

Allen discloses a method of actuation an engine valve (13) having a first position at which the engine valve prevents a flow of fluid relative to the engine valve and a second position at which the fluid flows relative to the engine valve, comprising: rotating a first cam (11) having an outer surface adapted to move the engine valve between the first position and the second position during a first lift period; rotating a second cam (12) having an outer surface adapted to move the engine valve between the first position and the second position during a second lift period; operating a cam following assembly (See Figs. 3-4, 8-9, 16-17, 21-24) to selectively connect one of the first and second cams with the engine valve and moving the engine valve through one of the first and second lift periods; directing a pressurized fluid to a bore (of 29) in the cam following assembly to move a piston (30) into engagement with a first cam lever.

Allen discloses the invention as recited above, however, fails to disclose the pressurized fluid being directed to engage the first cam lever to connect the second cam with the engine valve, and being released from the bore to connect the first cam with the engine valve; and further including allowing the pressurized fluid to leak past the piston in the bore to allow the piston to retract into the bore.

The patent to Kuroda on the other hand, teaches that it is conventional in the outboard motor art, to utilize a hydraulic link switching mechanism (M3) to alternate the engagement between the cams (52, 53) and engine valves (33).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have utilized the hydraulic switching method among the engagements between cams and engine valves as taught by Kuroda in the Allen method, since the use thereof would provide an improved method to actuate engine valve more effectively, under various engine operating conditions.

**6. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Allen et al. in view of Kuroda (as applied to claim 11 above) in view of Cote (US Patent 3,777,729).**

The modified Allen method discloses the invention, however, fails to disclose a bleed valve being used with the piston.

The patent to Cote on the other hand, teaches that it is conventional in the hydraulic engine governor art, to have utilized a bleed valve (70) with a hydraulic actuator (30).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have utilized the bleed valve as taught by Cote in the modified Allen method, since the use thereof would provide an improved method to control an engine valve actuation system more effectively.



***Allowable Subject Matter***

7. Claims 3-8, and 18-23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Response to Arguments***

8. Applicant's arguments with respect to claims, 1, 3-7, 9, 11-14, 17, and 24 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

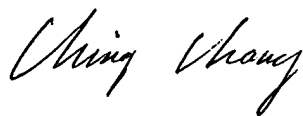
extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ching Chang whose telephone number is (571)272-4857. The examiner can normally be reached on M-Th, 7:00 AM -5:00 PM.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Denion can be reached on (571)272-4859. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Patent Examiner



Ching Chang



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